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AUTHOR	Frye, Ellen
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ABSTRACT

A descriptive, developmental study of children's imitation of interrogative sentences was conducted among 16 preschool and 15 kindergarten children acquiring English as either a native or a second language. A program of language activities based on four American folk rhymes (three in the form of a rhythmic dialogue and the fourth an antiphonal chant) was introduced into the children's classrooms. The program was implemented once a week for approximately 15 weeks at both grade levels. The folk rhymes were used by the teacher/observer in conjunction with verbal and nonverbal, motoric interaction activities in structured groups and semi-structured teacher-child interactions. Children's imitations of the folk materials were tape recorded and transcribed. Anecdotal reports of spontaneous peer interactions and private uses of the folk materials were also part of the research design. Among the results, imitations of interrogative patterns were found to be filtered through the children's rule systems. Four types of developmental error were identified. The four children learning English as a second language, who provided the most complete data records, were found to move through predicted stages of developmental error. It is concluded that imitative activities conducted in a Piagetian context of active accommodative behavior appear to be valid for an early childhood language program. (Author/RH)

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THE USE OF IMITATION AS A TEACHING STRATEGY IN AN EARLY CHILDHOOD LANGUAGE PROJECT

BY

ELLEN FRYE

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of the requirements for the degree of

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> Imitation fits into the general framework of sensori-motor adaptations which characterize the construction of intelligence.
>
> --Piaget

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INTRODUCTION

This thesis will address the question of whether the use of imitation is a valid teaching strategy in an early childhood language program that operates within the parameters of current psycholinguistic theories of child language development and Piagetian theories of cognitive development. More specifically, it will examine the function of imitation in the development of the interrogative by children acquiring English as a native language and as a second language.

The study arises from the author's 15 years experience as an educator using the Carl Orff approach to music for young children. The Orff approach, although designed to foster musical development, is based on concepts that can be described in Piagetian terms. For example, children in an Orff program interact with the musical materials they explore, responding to them and reshaping them according to their own developing sense of musicianship. In the terminology of Piaget, the children "actively participate in the construction of [musical] actions," interacting both inwardly and outwardly as they create increasingly more complex musical structures. The teacher's role is to guide them into the construction of a musical intelligence.

The Orff approach to music education is a cross-modal approach that stresses the relationships between language and movement. While working with children learning English as a second language, the author observed that the children seemed to be assisted in their English language development as well as in their development of music and motor skills. Hence, it was hypothesized that certain teaching strategies, materials and learning activities of the music program could be used as a supplement to an early childhood language program if the teacher's focus were shifted from the fostering of general musical development to the strengthening of skills in specific areas of language development.

The project presented in this thesis tests one aspect of this broad hypothesis: the use of imitation as a teaching strategy. Imitation, although an integral component of Piaget's theory of child development and the focus of much psycholinguistic research, is not held in high regard by either Piaget-influenced educators or psycholinguistically oriented curriculum designers in the United States. Indeed, the use of imitation, so closely associated with the pattern repetition methods of behaviorist educators, is, for the most part, purposefully avoided in such programs. Imitation, a basic strategy for music educators, is unfortunately equated with teacher-dominated rote repetition in language programs.

Imitation, however, need not be a rote activity, as the most recent wave of psycholinguistic research (Nelson, 1973; Bloom, Hood and Lightbrown, 1974; Miyamoto, 1973; Ryan, 1973) has revealed and as Piaget's early work (1962) pioneered. The author has observed children imitating musical structures and then reshaping them to create new musical ideas. She has also observed young children's spontaneous imitations of language, imitations that grew from echo copies to new (and often novel) linguistic structures. These observations led to the hypothesis that imitation can be an effective teaching strategy provided the educator is able to elicit the active accommodative behavior of imitation in the Piagetian sense.

The project described in this thesis, then, is based on the theoretical assumption that the use of imitation is a valid teaching strategy and has its place--as one of many strategies--in any comprehensive early childhood language program. To test this hypothesis, the author presented language materials containing four types of interrogative structures for imitation by 31 preschool and first grade children, including 11 children in the process of acquiring English as a second language. The imitations were observed and recorded over a period of 16 weeks and data were analyzed using descriptive methodology to assess the validity of the hypothesis.

PART I

REVIEW OF LITERATURE

Chapter 1

THE ROLE OF IMITATION IN LANGUAGE DEVELOPMENT

Imitation is both a product and a process. As a product, imitation can be viewed as echolalic behavior; that is, an exact and immediate copying of a model (Fraser, Bellugi and Brown, 1963); or it can be more broadly defined as a reduction or expansion of the original model (Brown, 1965). As a process, imitation is the functional link between the behavior of the child who imitates and the behavior of the person who models the behavior (Whitehurst and Vasta, 1975). It can be defined as a recoding of input; that is, a processing through the present syntactic competence (Menyuk, 1963; Rodd and Braine, 1970); or it can be limited to rote repetition that is not necessarily accompanied by comprehension (Slobin, 1968).

That children imitate during the early years of language development has been well documented over the years of child development research. Exactly what role imitation plays in the language acquisition process, however, has been the subject of considerable dispute. Some early theorists believed that children are virtually compelled to imitate (Kirkpatrick, 1909). Guillaume (1926) described language imitation as a process developing from self-imitation to imitation of others, with the critical stage of imitation occurring between the stage of comprehension and the beginning of speech. Most early observers saw imitation as being crucial to language development (for example, Preyer, 1882; Jesperson, 1922; Valentine, 1930); others, however, discounted its importance (for example, Thorndike, 1913; Meumann, 1903).

The controversy about the role of imitation in the language acquisition process of children has continued into modern research and theory. Behaviorists see imitation (in the sense of a modeling of behavior) as fundamental to language acquisition, theorizing that new behaviors must be imitated before they can be incorporated into the child's repertory of speech (see, for example, Jenkins and Palermo, 1964; Staats, 1971). Skinner (1957) proposed a comprehensive theory of language learning in which he described specific linguistic behaviors as being first acquired through operant conditioning and then extended through imitation and response generalization.

Chomsky (1959), in reviewing Skinner's book, attacked the entire behaviorist learning theory for failing to recognize the active participation of the child in the language acquisition process. He proposed that the real starting point for investigating the child's acquisition of language is the question of how a child acquires a generative-transformational grammar. That is, what is the process through which a child learns how to generate sentences that adequately transform deep structures (in the linguistic sense) into a surface syntax that is comprehensible within the linguistic environment he inhabits?

Chomsky's proposal virtually founded the modern school of psycholinguistic research, a school that combines modern linguistic theory with child development research, focussing, for the most part, on children in the earliest stages of language development. This field of research began from the position that imitation plays no important role in a child's acquisition of grammatical structures, reasoning that

> imitation probably is not an important device in language acquisition because aspects of language which the child must acquire are not available to be imitated: he is exposed only to surface structures of sentences, but what he must acquire are deep structures and the transformational rules which relate deep and surface structures (Slobin and Welsh, 1967: 485-86; see also, McNeill, 1966; Fodor, 1966).

EARLY PSYCHOLINGUISTIC THEORIES

Imitation as a Device for Language Acquisition

One of the earliest psycholinguistic studies on imitation found that a child's ability to imitate language exceeds his ability to comprehend that same language. Fraser, Bellugi and Brown (1963) compared three-year-old children's responses to ten grammatical contrasts in imitation (I), comprehension (C) and production (P) tasks. Defining imitation as echolalic behavior, they found that the imitation scores for all ten grammatical features were substantially higher than the production scores. They concluded that

> Imitation depends only on the perceptual-motor organization of speech, whereas Comprehension depends on reference, and reference is more complex than speech. . . . Production entails all the operations of Imitation, and, in addition, depends upon knowledge of referential distinctions (Fraser, Bellugi and Brown, 1963:471).

Their formula, I>C>P, indicates that a child is able to imitate constructions he does not comprehend. Without defining imitation as a necessary device for language learning, Fraser et al did seem to be suggesting that imitation occupies an important stage in language development.

Another early study criticized the Fraser, Bellugi and Brown research for having used elicited imitations. Ervin-Tripp (1964:392) suggested that "the real test as to whether imitation is significant as a source of progress in grammar should be based on spontaneous imitations, for children may imitate selectively." Basing her study on the collected samples of the spontaneous speech of five children, Ervin-Tripp divided the utterances into two categories. The imitative category consisted of immediate and exact repetitions of adult utterances, while the spontaneous category consisted of all other sentences. A grammar[1] for the spontaneous category was written and then applied to the imitative category. Ervin-Tripp hypothesized that, if imitation were indeed in advance of comprehension and production, the grammar written for the spontaneous utterances (that is, those utterances a child needed to comprehend in order to produce without a model) would not apply to the imitative utterances. Her data disconfirmed the hypothesis.

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1. A grammar, in the linguistic sense, is simple a theory of language. It represents an outsider observer's best attempt to summarize and characterize the language of the speaker. It is also an attempt to describe the organization of language in the mind of the speaker. Psycholinguists traditionally view the child as the speaker of an exotic language which can be linguistically described in the same way a foreign language can be described. See Dale, 1976.

Instead, she found that the grammar for the spontaneous utterances adequately accounted for both categories of utterances for all the children except one. The exception was a child whose imitations actually seemed to be less advanced structurally than her spontaneous speech. Ervin-Tripp concluded that

> imitations under the optimal conditions, those of immediate recall, are not grammatically progressive. We cannot look to overt imitation as a source for the the rapid progress children make in these early years (Ervin-Tripp, 1964:397).

Other researchers engaged in longitudinal studies of children developing language also concluded that imitations seem to play an insignificant part in the acquisition of grammar. Brown and Fraser (1963) observed that spontaneous utterances cannot be derived from imitations since children make systematic errors that indicate they are inducing grammatical rules from their linguistic input. Viewing early child speech as a systematic reduction of adult speech accomplished by omitting functors,[2] they concluded that children induce grammatical rules from this corpus of reduced sentences, rules which then govern the construction of sentences.

Brown (1965) observed that a child's introduction to the English language ordinarily comes in the form of a simplified, repetitive and idealized dialect. He noted that children's imitations, reduced from the original models, tend to preserve the word order of the model sentences, suggesting that children process the model as a total construction rather than as a list of words. He also noted that when the length of the model increases, the length of the imitation does not, indicating that there is a limitation on the length of utterance the child is able to program. Finally, he observed that imitations, like children's spontaneous utterances in the first stage of language development,[3] are telegraphic, omitting functors and concentrating on the contentives.

---

[2] Contentives and functors are terms used to define two linguistic categories. The former are chiefly nouns, verbs and adjectives. The latter are the grammatical morphemes that modulate the meaning of the contentives and include inflections, auxiliaries, prepositions, articles and the copula. See Brown, 1973.

Brown also discussed another kind of imitation in child language development: the imitation with expansion that adults make of children's utterances. Comparing adults' expanded imitations and children's reduced imitations, he noted that the adults tended to supply the functors that the children's telegraphic speech omitted. In contrast to the reduced imitations, however, which could have been produced by a machine programmed to "preserve the word order and omit functor" (Brown, 1965:293), the expansions could not be produced by a simple programmed instruction to make grammatically compulsory additions to the child's utterances. Most expansions, Brown noted, are responsive not only to the child's actual words, but also to the circumstances surrounding the utterances. The expansion encodes aspects of reality that are not coded by the telegraphic utterance. Brown conjectured that expansion transformation might be an effective teaching technique, since it confirms a child's response while at the same time taking him linguistically beyond that response (but not too far beyond it).

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[3] Brown (1973) divides child language development into five stages, the first of which is the telegraphic stage and the last four being various stages of functor acquisition.

Cazden (1965) tested Brown's hypothesis. Working with lower-class black children in the telegraphic stage of speech, she placed the children into two groups, each of which spent 30-40 minutes daily with an adult. In one of the groups the adult carefully expanded all of the children's utterances according to the expansion-imitation techniques Brown (1965) and Brown and Bellugi (1964) had observed in their natural settings. In the other group, the adults modelled well formed sentences in response to the children's utterances but carefully omitted any of the actual content words that the children had used. Cazden expected to find that the expansion technique would result in the greater grammatical improvement. Instead, although the expansion-imitation group showed improvement over a control group that had no sessions with adults at all, they fell behind the modelling group. Cazden (Slobin, 1968: 443) concluded that "there is no evidence that expansions, as provided in this research, aid the acquisition of grammar."

These early studies, both experimental and observational, would seem to confirm Chomsky's (1965) view that the child comes to his linguistic environment equipped with principles concerning the nature of syntactic structures and, given a corpus of natural speech to process, the child deduces the specific features of that language. Within this framework, syntactic innovations result from analysis rather than from imitation and imitation is seen as an interesting phenomenon but one of no great importance in the actual progress of language acquisition

Imitation as a Tool for Studying Child Language

Although early researchers concluded that imitation was not a necessary step in the development of grammatical structures, the frequency of children's language imitations[4] precluded ignoring imitation altogether. Chomsky's distinction between competence and performance[5] had made researchers aware that what a child says may not reflect all that he knows how to say. Having ruled out imitation as a device by which children acquire grammatical structures, Chomsky pointed toward the use of imitation as a means by which to examine the child's knowledge of language:

> Thus, for example, the child's ability to repeat sentences and nonsentences . . . might provide some evidence as to the underlying system he is using (Chomsky, 1964:39).

Three studies have explored this hypothesis that imitation can be used systematically as a tool for investigating a child's linguistic competence.

Slobin and Welsh (1967:486) set up an experimental situation in order "to determine what can be learned through the use of controlled elicited imitations as a probe to discover the child's underlying linguistic competence." Their report, based on 1000 imitations elicited from one child between the ages of 2:3:2 and 2:5:3 (years, months, weeks), is a model for using imitation as an investigative device to learn about child language.

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[4] Estimates of the frequency with which children spontaneously imitate adult utterances include 5-20% (Ervin-Tripp, 1964); 10% (Brown's data computed in Slobin, 1968); 16-52% (Rodd and Braine, 1970); and 51% (Lieven's data reported in Ryan, 1973).

[5] Chomsky (1964) distinguishes a speaker's linguistic competence from his performance. The former term refers to the internalization of linguistic structures and rules that allow a speaker to generate sentences; the latter refers to the speaker's actual use of his internalized grammar in speech.

Starting with the definition of imitation as a process, they systematically varied model sentences, eliciting repeated imitations for each sentence. In their analysis of those repeated imitations, they concluded that sentence recognition and imitation are filtered through the individual's productive linguistic system. Rephrased in Piagetian terminology, they stated the conclusion:

> A sentence, when recognized, is assimilated to an internal schema, and, when reproduced, is constructed in terms of that schema (Slobin and Welsh, 1967: 490).

They also concluded that the process of sentence recognition includes both form and content; that is, both syntactic structures and subject content take up space in the memory. More specifically, they noted that rote imitation occurs when content has been sacrificed to the retention of form, while content, if it has been retrieved and stored, may be encoded in the child's own syntax in imitation.

A slightly different experiment using imitation as a tool for testing specific hypotheses about the grammatical competence of a child was devised by Rodd and Braine (1970). Using alternative forms of a grammatical construction relevant to the child's current competence (one obeying and the other contradicting a rule the child supposedly knows), they reasoned that the child's imitations of the alternative forms would differ according to his knowledge of the rule. Their investigation was directed at exploring whether these kinds of imitations might provide useful data which could be interpreted to reflect grammatical competence.

Using spontaneous imitations (as opposed to Slobin and Welsh's elicited imitations), Rodd and Braine found that children, when they imitate adult speech, do not merely repeat as much as memory span permits and omit the rest. During the imitation sessions they saw little evidence that the children were making any effort to repeat the model sentences accurately. Nor did they hear children consciously correcting ungrammatical model sentences. In fact, the children seemed totally unaware of any syntactic similarity or difference between their utterances and the model utterances. From the children's point of view, they were carrying on conversations in which imitative and nonimitative utterances alike were useful. Analyzing these data, Rodd and Braine concluded that a child's spontaneous imitation is

> an active process of assimilating and reorganizing the adult utterance, and reproducing it in accord with his current grammatical competence (Rodd and Braine, 1970:441).

Shipley, Smith and Gleitman (1969) devised a third approach to the use of imitation to investigate children's linguistic competence. Working with children in various stages of telegraphese, they tried to examine the way children process novel material. They hypothesized that whether or not a child noticed syntactic anomalies would suggest a level of knowledge not reflected in his speech. They systematically varied commands to their subjects using different syntactic forms as well as nonsense words, and looked for the appropriateness of the children's responses (both linguistic and extralinguistic) to the various verbal stimuli in order to infer the child's organization of what he hears. In analyzing the results of the experiment, Shipley et al found that, while the over-all tendency to imitate decreases as the child's linguistic skills progress (a finding also reported in Brown and Bellugi, 1964), when a command contained nonsense, the more mature subjects imitated as much as the less mature ones. They also found that imitation occurred on more trials with nonsense than trials without nonsense and that imitation was more likely to occur when syntactic structures were anomalous to the child. Observing that the children seemed to repeat what was just a little beyond their current linguistic capacity, they concluded that both anomalous words and anomalous constructions stimulated the child's imitation. That is, the material that was imitated seemed to be the material that puzzled the child, but was not so puzzling as to be unavailable to the child for repetition.

Without drawing any definite conclusions, Shipley et al conjectured that imitation does play some role in language development, that

> the child appears to use repetition as another method for approaching the linguistic environment selectively . . . and that what can be chosen for repetition -- for recontemplation or rehearsal -- is also highly selective (Shipley, Smith and Gleitman, 1969:338).

These three studies and others (see, for example, Slobin, 1968; Bloom, 1973; Smith, 1970), seem to be pointing toward a reexamination of the role of imitation as an active rather than passive process. If imitation is seen as merely echolalic behavior, and that behavior is not different in its grammatical structure from spontaneous speech, then the conclusion may be drawn that imitation serves no necessary function in language acquisition. If, instead, imitation is redefined as an active process of assimilating and reorganizing linguistic structures that are just beyond the reach of the child's current ability to produce spontaneously, then the child may be using imitation as a strategy to gain experience in encoding the new linguistic structure.

Before an examination of the psycholinguistic research which explores this new direction, it will be necessary to review the role of imitation within Piaget's theory of child development.

PIAGETIAN THEORY

For Piaget, language learning is bound to imitation since language is representation and all representation stems from imitation (Sinclair, 1975). That is, the acquisition of language, along with the formulation of representational thought, belongs to the general process of symbolic function formation. The capacity to represent reality by distinct signifiers has its roots in imitation which starts early in the sensori-motor period and which is itself a kind of representation by action (Sinclair, 1969).

In order to understand the relationship of imitation to language acquisition in Piagetian terms, it is necessary to look at the pre-verbal period of child development and examine the development of imitative behavior in relation to the general development of sensori-motor intelligence.

Sensori-Motor Imitation

According to Piaget, pre-verbal imitation is one manifestation of infant intelligence and its development is closely connected to the development of concept formation. Within Piaget's assimilation/accommodation model of sensori-motor intelligence,[6] imitation is seen as "a continuation of the effort at accommodation" (Piaget, 1962:5). When the stable equilibrium between assimilation and accommodation is upset in favor of accommodation, the activity becomes imitation. Imitation is thus a differentiated aspect of the act of intelligence that is temporarily detached.

Piaget (1962:6) defines imitation as a process; specifically "the act by which a model is reproduced." He does not see imitation as innate, but rather that the child learns to imitate; and this learning process, like any other, raises all the problems involved in cognitive development.

During the first three stages of sensori-motor development (0-8 months), the infant progresses from a kind of pre-imitative behavior, in which the model stimulates the continuation of the child's own behavior, to an early kind of imitative behavior in which the infant truly imitates model behaviors--but only those that are already in his own productive repertory. There is, of course, no differentiation as yet between accommodation to external data and reproductive assimilation. However, Piaget sees both vocal contagion (the crying of others assimilated into the child's crying) and mutual imitation (the experimenter's imitation of the child's behavior stimulating a continuation of that behavior) as primary circular reactions that constitute the beginning of imitation. This pre-imitative behavior leads directly into imitation proper. Isolating two basic characteristics of early imitation, Piaget notes first, that the child can only imitate sounds and movements that he himself can already make; and second, that the child can only imitate movements that are visually perceptive to him. Piaget ascribes these limitations to the fact that the child, in these early stages, cannot yet coordinate schemata and therefore a model will be imitated only if it can be assimilated to a sensori-motor action that has been practiced as a whole. This is because the child's perception of the model behavior arises out of the assimilation of the model to an already existing schema rather than out of a true accommodation to external data.

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[6] Piaget's model of sensori-motor intelligence is described in terms of a developing assimilation which tends to incorporate external objects and actions to internal schemata, while simultaneously accommodating those schemata to the external world. The resulting equilibrium between assimilation and accommodation is what Piaget terms the properly intelligent adaptation of the child to his environment. See Piaget, 1962.

As assimilation and accommodation gradually become differentiated in the later stages of sensori-motor development (8-18 months), the child begins to imitate models of behavior that are completely new to him (Piaget, 1962). Developing the capacity to coordinate schemata in general, the child utilizes that coordination to assimilate the movements of others to his own, even movements he can only perceive tactually or kinesthetically (such as sticking out the tongue). At the same time, as he begins to differentiate relationships between things, these new associations make it possible to accommodate schemata to new models. At this point, imitation becomes a specialized tool of acquisition.

The progress of imitative behavior in these latter stages of development keeps pace with the general process of concept formation (Piaget, 1962). Both proceed by gradual differentiation. Imitations may sometimes show only slow gradation, but at some point the child will suddenly "grasp" the relationship between the model and the corresponding sound or gesture. Making movements that are structurally analogous to but not identical with the model, for instance (such as opening and closing the hand in response to the experimenter's opening and closing of the eyes), the child may all at once comprehend the model behavior and imitate it directly. It is as if he first tried out various hypotheses and finally hit on the right one.

As the child develops, his haphazard imitative investigations of various schemata to fit the model are gradually replaced by a systematic hypothesis-testing procedure to discover new properties of objects and actions (Piaget, 1962). Through these experimentations, new imitative tools are discovered that help him extend his coordination of schemata. With these tools, the child can imitate more and more complex models as well as unknown movements related to nonvisible parts of the body in more and more systematic experimentations. Imitation has thus become a specialized accommodative tool, an independent function, through which the child can modify existing schemata with respect to new objects and actions.

Internalized Imitation and the Beginning of Symbol Formation

As sensori-motor intelligence develops during the sixth stage (18-24 months), the child's schemata become independent of immediate perception and the child's experimentation becomes internalized. This development is parallelled in the process of imitation as accommodation becomes internalized and begins to reach the level of representation.

The transition from overt imitation as action to internalized imitation as representation is manifested in what Piaget terms "deferred imitation"; that is, imitative behavior in which the child reproduces the model some time after it has occurred (Piaget, 1962). Using the example of a child mimicking another child's temper tantrum a full day after the original occurrence, Piaget observes that the imitation is no longer dependent on the immediate stimulus of the model and that the child has, in fact, internalized it in order to reproduce it later in time. Deferred imitation is significant for Piaget because it is through this transitional process that the child produces his first signifiers[7] that represent for him the absent model. Thus the child is able to evoke in thought, as opposed to merely carrying out in reality, events that occurred in the past.

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[7] Piaget defines a signifier as a material event that signifies (for the person using it) another event, which he designates the significate. See Furth, 1969; Flavell, 1963.

Once the capacity to evoke images or signifiers is established, the child can begin to use them in anticipation of future actions. This is true internalized imitation, or mental imagery, and it is this that constitutes for Piaget the beginning of representational behavior (Piaget and Inhelder, 1969). Representation in action is liberated from direct perceptual copy and has reached the stage where action, detached from context, becomes a differentiated signifier and thus a representation in thought.

Representation, in its broadest sense, is equivalent to thought (Piaget, 1962). It is an intelligence that is based on a system of concepts rather than mere perceptions and actions. In a narrower sense, representation is restricted to the mental image or symbolic evocation of absent realities. Specifically, the concept is an abstract schema and the image a concrete symbol. It is images that are implicit in the internalized imitation.

Piaget notes two kinds of images: symbols, which are personal and related to the signified by some resemblance which the child creates himself; and signs, which are arbitrary and part of a conventional system determined by the social environment (Piaget, 1962). It is significant that at approximately the same time that sensori-motor intelligence develops into conceptual representation, the child begins to put together elements of the system of social signs: language.

Imitation, then, in the Piagetian framework of sensori-motor adaptations which characterize the construction of intelligence in the first two years of life, plays an important role in the preverbal behavior that lays the foundation for language acquisition. Sensori-motor intelligence is a simultaneous accommodation of old schemata to new objects and assimilation of new objects to old schemata. The function of imitation is to take the "negative" of simple accommodation to external reality and turn it into a series of "positives" or reproductions and anticipations possible. Symbolic representation comes into being and the use of society's system of signifiers -- language -- becomes possible (Piaget, 1962).

CURRENT TRENDS IN IMITATION RESEARCH

Although Piaget's general system of cognitive development provides a sound basis for a theory of language acquisition (see Moerk, 1975; Sinclair, 1973), his theories have often been considered too broad to be of use for child language researchers. Most of his writings on language are concerned with language as but one factor in development (e.g., Piaget, 1955); in his experiments he refuses to consider language as a separate variable (Sinclair, 1969).

Most of the researchers reported here, however, have come to regard language acquisition as an active process in which the child uses his cognitive memory to process the linguistic environment while at the same time incorporating new aspects of that environment into his cognitive memory (see, for example, Slobin, 1966). This theory of language acquisition is remarkably similar to Piaget's assimilation/accommodation model of intelligence. The basic difference between early psycholinguistic research and the Piagetian experiments is that the psycholinguists, following the trend of American psychological research in general, have tended to study one aspect of language development in isolation, often basing their conclusions on a small corpus of data gathered from a few children. Some of the more recent psycholinguistic researchers have sought to broaden the context within which they examine aspects of language development without giving up the precision that comes with concentration on detail.

Nelson (1973), for example, begins her monograph with a general criticism of the way psycholinguistic research has isolated syntactical development from the larger complexity of the child's system of meaning and its relation to both language structure and the structure of the external world. She believes that however more complicated the task for investigators, semantics and nonlinguistic cognitive systems must be taken into account when studying the child's language within the context of meaning as well as structure.

Nelson's approach to language investigation is based on an interactional model of learning processes. She takes as pretheoretical assumptions that language development is integrally related to preverbal cognitive development, that the child is an active processor of the environment who organizes information about the world into perceptual-cognitive constructions, and that strategies of information-processing and hypothesis-testing are used by the child to bring his own world view into harmony with the world around him. Most of all, she believes that since all developing cognitive functions are interrelated and cannot be understood in isolation, the constructs of the child at the preverbal level are a base for the acquisition of language.

Nelson's longitudinal study of the acquisition of the first 50 words of 18 children aged one to two years was undertaken to study the strategies children use for acquiring their first words. The research was set within the framework of an interactional model relating the child's preverbal concepts and acquisition strategies to parent responsiveness to those concepts and strategies. Imitation -- both spontaneous and elicited imitations of adult speech and repetition or self-imitation -- was examined as but one of children's several processing strategies. In a test designed to elicit imitations of words that used pictures with both correct and incorrect referential labels, Nelson found that children tended to imitate words they already knew, whether or not the words were used appropriately. Analyzing the spontaneous imitation and the repetition data, she found that these types of imitative strategies seemed to be used more after children had reached the stage of vocabulary acquisition than before, but less once the children had advanced from the one-word stage to sentence building. In other words, children seemed to be using imitation to reinforce word-learning but dropping it as a major strategy once the focus shifted from simple word learning to the acquisition of grammatical structures. Nelson concluded that imitation might be defined as an accommodative strategy appropriate at a point where language acquisition has begun but is not yet advanced.

Bloom, Hood and Lightbrown (1974) conducted an extensive investigation into the function of imitation for both lexical and grammatical development in early childhood language acquisition. Their study focuses on the same period as Nelson's (1973), when children are progressing from using only one word at a time (MLU=1.0) to the emergence of grammar and the use of structured speech (MLU approaching 2.0). Verbal interactions of six children, primarily with the investigators but occasionally with their parents, were collected and analyzed. In order to determine the extent to which children imitate the speech they hear, a comparison was made of imitative and nonimitative utterances. They found that although different children imitated to a greater or lesser degree (a finding also reported in Nelson, 1973), each child was consistent in the tendency to imitate or not to imitate in progressing from the single-word utterances to the two-word stage. Two of the children imitated hardly at all, a finding which seemed to confirm the early psycholinguistic observations that imitation is not necessary to language acquisition. Some children apparently are able to acquire language without the use of productive imitation, as Lenneberg (1962) had earlier observed in reporting the case of an eight-year-old boy with anarthria who could comprehend complex syntactic structures without ever having produced spoken language.

However, for the children who did produce imitative utterances, Bloom _et al_ (1974) found that both lexical and grammatical imitations were developmentally progressive. Comparing the children's spontaneous speech with their imitative speech, they found that both lexical items and syntactical constructions fell into two distinct and nonoverlapping categories: those words or constructions that the children imitated and those they did not. When they examined the speech samples of the children across time, they found that there was indeed a clear trend for both lexical items and syntactical constructions to move from the imitative category to become predominantly spontaneous. They also found that, especially in the children who imitated the most frequently, imitation occurred most with syntactic forms that were just emerging in grammatical competence. That is, the children did not imitate what they already knew well nor what they knew nothing about; rather, they imitated only those utterances which were to become fully productive a little later in time but which were at present beyond their productive capacity. These findings confirmed for production, then, what Shipley et al (1969) found for comprehension; namely, that imitation is grammatically progressive. The findings also agree with the conclusions of two independently presented sets of data, Miyamoto (1973) and Ryan (1973).

Bloom et al interpret imitative behavior as an active process in which the child self-determines when and why he imitates. They see imitation as a device some, but not all, children use to process linguistic and nonlinguistic input from the environment for information about language. Children who imitate can thus process environmental input at two levels. At the first level, the model utterance provides perceptual support relative to events which are recognized by the child but as yet can only be partially mapped onto the linguistic schemata in cognitive memory. At the second level, the child's imitation provides experience in encoding relevant aspects of the context so that mapping of form and content can be affirmed. Thus, they define the imitative process

> as a form of encoding that continues the processing of information that is necessary for the representation of linguistic schemas (both semantic and syntactic) in cognitive memory (Bloom, Hood and Lightbrown, 1973:413).

These two studies are the most detailed of several recent psycholinguistic inquiries into the role of imitation in language development (see Kemp and Dale, 1973; Ryan, 1973; Miyamoto, 1973; Whitehurst, Ironsmith and Goldstein, 1974; Whitehurst and Vasta, 1975; Bohannon, 1975; Leonard and Kaplan, 1976; Ramer, 1976; Rees, 1976). They are representative of the current trend in psycholinguistic research to place language acquisition in a broader context and to describe strategies for language acquisition in terms that are compatible with Piaget's system for cognitive development.

Piagetian theory has often been criticized by psycholinguists because it seems to be least testable at the points between allegedly related areas of development, such as the linking of imitation as one necessary prerequisite of language acquisition to the actual verbal imitations reported in the course of language development (Ryan, 1973). These current imitative studies seem to be focussing on precisely that omission. They place closely observed verbal imitation into a broader contextual framework and define imitative verbal behavior in relation to an overall processing model that presupposes interaction between the child and his linguistic-cognitive environment. Thus, this research begins to close the gap between imitation as a general accommodative strategy in the construction of conceptual schemata and imitation as a specific strategy used to map concextual information into linguistic schemata.

IMPLICATIONS OF IMITATION RESEARCH FOR EARLY CHILDHOOD EDUCATORS

The early controversy surrounding the role of imitation in language development has been reflected in the many different approaches to language training found in early childhood programs. Curriculum designers influenced by behaviorist research have developed preschool language programs that stress pattern repetition as the central method of language learning. In these programs, the child is required to imitate a model sentence either directly, by repeating it immediately after the teacher has modelled it; or indirectly, by repeating a previously practiced model sentence in response to a question from the teacher or another child. The interaction is typically,

T: This ball is round. Now you say it.
C: This ball is round.

or,

T: What kind of ball is this?
C: This ball is round.

or,

C: What can you say about this?
C: This ball is round. (Bartlett, 1972:50)

In these programs, imitation is in the hands of the teacher who selects the material to be presented and models it. The child's role is to listen to the teacher, to respond appropriately to her requests for imitative behavior and to be rewarded for a correct response. Within the framework of traditional behaviorist theory -- a theory that views the entire language learning process as one in which the child acquires grammatical structures by imitating adult models through a stimulus-response mechanism (Goss, 1972), programs such as these may make sense. Within the framework of the previously discussed psycholinguistic theories of language acquisition and the role of imitation within the developmental process, they make less sense. Since the child is required to repeat the model sentence exactly as the teacher has said it, there is no room in these programs for the child to induce his own grammatical rules from the language modelled in order to generate his own similar utterances outside the classroom. Echolalic behavior being a product rather than a process, there is no evidence that imitation as used in these behaviorist-influenced language programs could be used by any child as a strategy to process details of even this most limited linguistic environment or to reinforce what he already knows about grammatical structures.

While language programs grounded in psycholinguistic theory tend to avoid pattern repetition as a technique for children's acquisition of new grammatical forms, some do make use of a limited amount of imitation. The Interactive Language Development

Teaching method, or ILDT (Lee et al, 1975), developed at the Northwestern University Speech and Language Clinic, for example, was designed for children who, although they had normal hearing and intelligence and no general neuromuscular problems, displayed severe expressive language problems. Clinicians, hypothesizing that these children had a "reduced ability for self-discovery of grammatical rules" (Lee et al, 1975:8), designed a program in which children would be encouraged to pay closer attention to grammatical forms, to, in fact, learn how to acquire the strategies necessary for language acquisition. Within this framework, interactive techniques were used that included the clinician repeating the complete target response for the child and then repeating a reduced model of it; or asking the child for an expansion of the child's own imitation.

Most psycholinguistically oriented language programs, however, especially those designed for use with normal children in group activities, play down the use of imitation and focus instead on the functional aspect of language and the need for children to practice their language skills in a relevant context, as part of a social interaction.

Piaget-influenced educators also focus on the functional aspect of language in their preschool programs, especially as it relates to concept learning. In the Ypsilanti Perry Pre-School Project (Weikart et al, 1971), for example, language is not taught directly and so there is no room at all for language imitations.

Instead, the teacher tries to create an environment that will induce the child to organize the language he already possesses so that it becomes a conceptual tool.

Just as psycholinguistic and Piaget theorists have recently begun to find a common ground, so curriculum designers might use this common ground to develop language programs that make use of all the insights of child language researchers. Programs such as Weikart's are limited because they provide no systematic method for either assessing difficulties of individual children or of remedying those difficulties, especially if they are in the area of grammatical structures. Programs such as the ILDT can focus on specific difficulties but are impractical for most preschool teachers because of the emphasis on one-to-one interactions and the detailed recordkeeping.

The current psycholinguistic research on language imitation, with its correlations to Piagetian theory of cognitive development, would seem to provide a good common ground on which to develop language activities that could satisfy both Piaget-oriented educators and those influenced by psycholinguistic research. Language activities that use the technique of eliciting active imitations of specific grammatical constructions (to be used, of course, in conjunction with other language activities) would be useful in two ways: 1) they would provide some children (but not all; see Bloom et al, 1974) with the opportunity to make use of a strategy with which to process (unconsciously) details of grammatical structures and to reinforce what they already know about those grammatical structures; and 2) they would provide teachers with a tool with which to continually assess in an informal way the progress a particular child is making in a particular area of language development.

Chapter 2

FIRST AND SECOND LANGUAGE INTERROGATIVE DEVELOPMENT

In order to use the findings of psycholinguistic research effectively in early childhood language programs, educators must understand not only the mechanisms of language acquisition, but also details of the grammatical structures under observation and the specific stages children pass through naturally as they acquire these structures.

TARGET GRAMMAR OF THE INTERROGATIVE

There are two basic types of interrogatives found in adult English. Yes-no questions are those in which the entire sentence is being questioned. They normally elicit a simple "yes" or "no" as a response, or a repetition of the sentence in declarative form. The question, for example,

Are you sleeping?

may be answered with a "yes," "no" or the complete sentence,

I am sleeping.

Wh-questions, on the other hand, are questions in which only part of the sentence is being questioned through the use of the interrogative pronouns, "who," "what," "why," "when," "where" or "which." The answer to a wh-question may be an incomplete sentence that simply replaces the interrogative pronoun with the appropriate determinant, as in

What's your name? Mary Jane.

Or, it may repeat the sentence in declarative form:

What's your name? My name is Mary Jane.

In terms of adult grammar, both types of questions involve transformations in moving from their deep structures to their surface syntax.[1] The Y/N question, for example,

Are you sleeping?

moves from a base which includes a question constituent, (Q),

(Q) You are sleeping

through a transformation that moves the auxiliary are to the front of the subject you to form the surface. In questions involving the use of a form of the auxiliary do, such as,

Do you want your money back?

the base structure is considered to include the unspoken auxiliary do with a subcategorization rule that says it will become spoken whenever such element, such as the subject because of inversion, intervenes between do and the main verb. In the past tense surface, such as,

Did you milk my cow?

---

1. A transformational grammar is simply a formal description of the intuitive knowledge a speaker has of the particular sentence he utters, including a deep structure (both grammatical and semantic), a surface structure and the various transformations, subcategorization rules, allomorphic rules, etc., that are required to map that deep structure onto the surface syntax. The representations of the transformational processes that follow are derived from Jacobs and Rosenbaum (1968); Klima and Bellugi (1966); and Cazden (1972a).

the base includes the past tense as a feature of the auxiliary and the transformation process is the same as for the present tense surface.

WH-questions involve two transformations in order to derive the surface from the deep structure. The WH-question,

Where do you live?,

for example, moves from the base,

(Q) You (do) live where

through first a preposing transformation in which the WH-pronoun is moved to the front of the string,

Where you (do) live

before the final transposition of subject and auxiliary occurs to form the surface.

DEVELOPMENTAL PROCESSES OF THE INTERROGATIVE

First Language Research

Adult transformational rules define the end point toward which child grammar is moving. Some theorists have argued for a pre-transformational period of language development during which the child generates his utterances with certain base component rules alone and only later learns to apply transformational rules (Miller, 1964; McNeill, 1966; Brown, 1973). Others hypothesize that transformations must be a part of the child's grammar in some form at the beginning of sentence construction, since it is transformations that allow for the possible generating of an infinite set of utterances as well as allowing for the expression of different meanings using the same base structure rules (Menyuk, 1969). The question remains theoretical, since the same child utterances can be described as either base structure strings or as transformed base structures, depending on the theorist's definition of transformations (Brown, 1973).

It is possible, however, to observe developmental changes that occur in the structure of children's interrogatives. Most researchers ascribe these changes to the kinds of operations that children seem capable of performing at different stages of development. Three research papers have described these developmental changes as they occur in the interrogatives of children acquiring English as their native language: Menyuk (1969); Klima and Bellugi (1966); and Brown (1968). Bellugi (1971) summarizes some of the earlier findings.

Menyuk (1969(, whose data were elicited from 150 3- to 7-year-old children, divides her interrogative structures into two basic periods. She sees the earlier period as one in which two simple transformational rules are applied: 1) the application of intonational rules on a single underlying string, as in

Mommy try it?

and 2) the expansion or conjunction of an element in the underlying string, as in

Where pencil?

Noting that when children say, Where daddy go?, but not Who or What daddy go?, they are applying restrictions on the conjunction of the interrogative pronouns, Menyuk (1969:70) describes this step in the acquisition of operations for generating interrogatives as the "conjunction of an element to a sentence with no operations involved on the underlying sentence but with some restrictions involved."

Menyuk's later period occurs after the child has acquired control over the use of the auxiliary/modal node and transformational questions occur more and more frequently with both inversions of the auxiliary/modal and tense markers being applied correctly. Menyuk describes a period of development between these two stages during which the rules are sometimes applied inappropriately (in adult terms), as, for example, when the tense is attached only to the main verb,

Where do the wheel goes?

or to both the auxiliary and the main verb,

Where does the wheel goes?

Menyuk notes that these not completely well-formed interrogatives are produced at the same time as completely well-formed utterances and that throughout this age range deviant utterances continue to be produced. The frequency of such utterances, however, decreases markedly as the child gains control over the auxiliary/modal in all sentence structures.

As part of the well known Harvard Language Acquisition Project, Klima and Bellugi (1966) analyzed the questions formed by Adam, Eve and Sarah during their developmental stages marked by MLU = 1.75 and MLU = 3.5. Using both the children's utterances and evidence about the children's understanding of interrogative constructions in the language of others, Klima and Bellugi attempted to capture the regularities in the interrogative rule system found in the three children at three different stages of their language development.

During Period 1, the children produced questions in which a rising intonation expressed the marker of the Y/N questions, as in

Fraser water?

or,

Sit chair?

with the nucleus of these sentences consisting primarily of nouns and verbs with neither tense nor markers. WH-questions produced by the children during this period fell into the format,

What's that?

Where (NP) (go)?

and

What NP doing?

At Period 2, Klima and Bellugi note that, although the children have made some progress in the development of pronouns, articles and modifiers, early noun and verb inflections, they have not yet developed modal auxiliaries in affirmative sentences and use only two modals in negative sentences (can't and don't). During Period 2, the WH-question begins its adult function of requesting specific information to be supplied by the object of the verb, with the questional constituent deleted. Y/N questions, however, remain in their uninverted form.

During Period 3, Klima and Bellugi note that the interrogative system is becoming more similar to the adult system. Y/N questions contain subject/verb inversions, although auxiliary verbs are not yet inverted with the subject in WH-questions. The children's grammar in general shows considerable development by Period 3, with the more difficult noun and verb inflections appearing regularly and sentences often containing relative clauses.

Brown (1968), also using the data supplied by the Harvard Project to analyze the developmental process of WH-questions, hypothesized that children go through a stage of producing WH-questions using only the preposing transformation without the transposing one. Brown notes that the earliest productions of WH-questions, such as,

What is that?

(or, as the question actually sounds, What dat?), are probably not the result of internal transformational processes but rather a learned routine. At Klima and Bellugi's Period 2, Brown points to the beginning of the acquisition of WH-question transformations and hypothesizes that these first transformations involve only preposing without transposing. That is, beginning with the base structure,

(Q) That is what,

the child preposes the interrogative pronoun to produce

What that is?

but is not yet able to transpose the auxiliary and subject to form the adult

What is that?

Brown concedes that a question such as

What you want?

could have been produced by telegraphic reduction of the preposed and transposed

What do you want?

rather than from preposing alone directly from the base

(Q) You want what.

However, the sizeable number of questions with verb inflections and auxiliaries, such as

What he wants?

and

What you will have?

found in the data, which clearly could not have been produced by telegraphic reduction, confirm his hypothesis.

Second Language Research

Researchers studying the interrogatives of children learning English as a second language have found that the developmental stages of second language (L2) children are remarkably similar to the stages described in first language (L1) research. Gillis and Webster (1976) analyzed the English utterances of two Japanese boys and found that the differences between the interrogatives of their subjects and those of the Harvard children were less striking than the similarities. They found that they needed to modify some of Klima and Bellugi's Period 1 rules to accommodate their subjects' use of unsegmented interrogative markers such as

TABLE 1. COMPARISON OF L1 AND L2 DEVELOPING INTERROGATIVES

Developmental stages	L1 examples (Klima & Bellugi, 1966)	L2 examples (Hatch, 1974)
I. Attachment of intonation marker or WH-pronoun to uninverted nucleus (NP-(doing)/(go)); some memorized routines (is it/what's/where's)	Fraser water? See hole? I ride train? What('s) that? What cowboy doing? Where horse go?	This is Canada? You Joe, okay? Is it this flower? What's this one? Where's this go? Which dice here?
II. Expansion of nucleus to include unmarked verbs (L1 & L2), adj. & loc. (L2); beginning aux/modal with occasional Y/N inversion (L2)	Mom pinch finger? You want eat? I have it? Where baby Sarah mitten? What the dollie have? Why you waking me up?	This is a face? Can I play? Did you got something? Where's Mark is? Why the baby crying? When you go yours house?
III. Development of aux/modal with beginning transformations (WH preposing, subj/aux inversion, do insertion); WH-questions often preposed without subj/aux inversion; overgeneralization of tense markers	Does the kitty stand up? Oh, did I caught it? Are you going to make it with me? Where the other Joe will drive? What did you doed? Why the Christmas tree going?	Like you not ice cream? Is this yours house? What you did in Rothbury? Where goes the eraser? Why did you give me this?

As Table 1 indicates, the development of the interrogative, both in the increased complexity of phrase structure rules and in the transformations required to derive surface syntax from base structures, proceeds through sequential stages and within syntactical parameters remarkably similar for both first and second language learners. These findings seem to indicate that older children acquiring English as a second language operate within the same constraints and with the same psychological mechanisms as younger children acquiring English as their native language. The older children (and adults) seem to restrict themselves to elementary mechanisms, holding back their previous linguistic experience as they impose order on sentences whose surface forms are not direct representations of their underlying structures (Gillis and Weber, 1976).

The one strategy that L2 children seem to employ more than L1 children is the use of unsegmented patterns, a strategy that permits the older child to participate in situations where he understands what is called for linguistically but lacks the underlying system to construct the utterances himself (Hakuta, 1976). Otherwise, the children's prior knowledge of another language and their maturity does not seem to influence their learning of a second language, except in the accelerated rate of acquisition. Thus, older children learning English as a second language, while not constrained by limited cognitive capacity of younger children, act as if they were when dealing with new syntactical experiences. What determines the progression of development seems to reside wholly in the nature of what is to be developed: the language itself (Gillis and Weber, 1976; Hakuta, 1976; Hatch, 1974).

Grammatical Morphemes Within the Interrogative

It should be clear from the preceeding discussion that two separate processes are occurring simultaneously during the development of the interrogative. One is the child's discovery of the transformational rules that govern the move from deep to surface structures. The other is the child's acquisition of and control over the grammatical morphemes that allow him to advance from telegraphic speech to the construction of utterances that express number and tense.

First language researchers, in studying the acquisition order of functors, have found an invariable order of acquisition of noun and verb inflections, auxiliaries and the copula, in their subjects' data (Brown, 1973; de Villiers and de Villiers, 1973). Second language research has also found a consistency in the order of the acquisition of these same morphemes, even when the linguistic backgrounds of the subjects included Spanish, Chinese, Korean, Japanese, Arabic and Persian (Dulay and Burt, 1973, 1974; Fathman, 1975; Bailey, Krashen and Madden, 1974; Larsen-Freeman, 1975, 1976). Just as the developmental stages of the interrogative seem to be governed by the target language, so does the actual order of acquisition of specific functors within the interrogative seem to remain free of influence of the native language.

However, even though the sequence of functor acquisition appears to be determined by aspects of the English language, the rank orders for first and second language learners are not identical. Table 2 compares the L1 and L2 orders of acquisition for verb inflections and auxiliaries.

TABLE 2. COMPARISON OF L1 AND L2 VERB PHRASE FUNCTOR ACQUISITION ORDERS

L1		L2	
3 children spontaneous speech (Brown, 1973)	21 children elicited speech (de Villiers and de Villiers, 1973)	255 children (Spanish-Chinese) elicited speech (Dulay and Burt, 1973, 1974)	6 children, adults (Spanish) spontaneous speech (Rosansky, 1976)
prog -ing	prog -ing	prog -ing cop is/'s aux be	prog -ing cop aux
past irreg cop is past reg 3d pers sing	past irreg past reg 3d pers sing cop 's	past irreg 3d pers sing	past irreg past reg 3d pers sing
aux be cop 's	cop is aux be		

As Table 2 shows, the L2 sequences are both similar to and different from the L1 sequences. Across both L1 and L2 studies, the present progressive inflection is uniformly acquired first with the past-tense and third person present tense inflections occupying a fairly wide later band. In other words, both L1 and L2 children move from the early use of verbs in their unmarked generic form to modification first with the present progressive ending, then with both the regular and irregular past tense inflections and finally with the third person singular present tense indicative inflection. Table 2 also indicates that two morphemes are acquired at radically different points in the sequences of first and second language learners: the copula and the auxiliary be. For reasons as yet unknown to researchers, children acquiring English as a second language seem to be able to perceive and utilize the auxiliary and the copula much earlier in the process of language development than L1 children.

The functor acquisition sequences described so far do not account for all the morphemes within the interrogatives focussed on in the language project presented in Part II of this thesis. In addition, the questions under observation include constructions using the auxiliary do (in both present and past forms) and the perfect auxiliary have with the past participle seen. According to both first and second language research, the former morpheme appears coincidentally with the copula and the auxiliary be (Menyuk, 1969; Klima and Bellugi, 1966; Miller, 1964; Brown, 1973; Dulay and Burt, 1974). The latter, however, seems to be a much later acquisition for both L1 and L2 children (Brown, 1973; Dulay and Burt, 1975). Figure 1 combines into a hierarchical structure the order of acquisition of verb inflections and auxiliaries for both L1 and L2 children.

FIGURE 1

Hierarchical Orders of L1 and L2 Verb Phrase Functor Acquisition

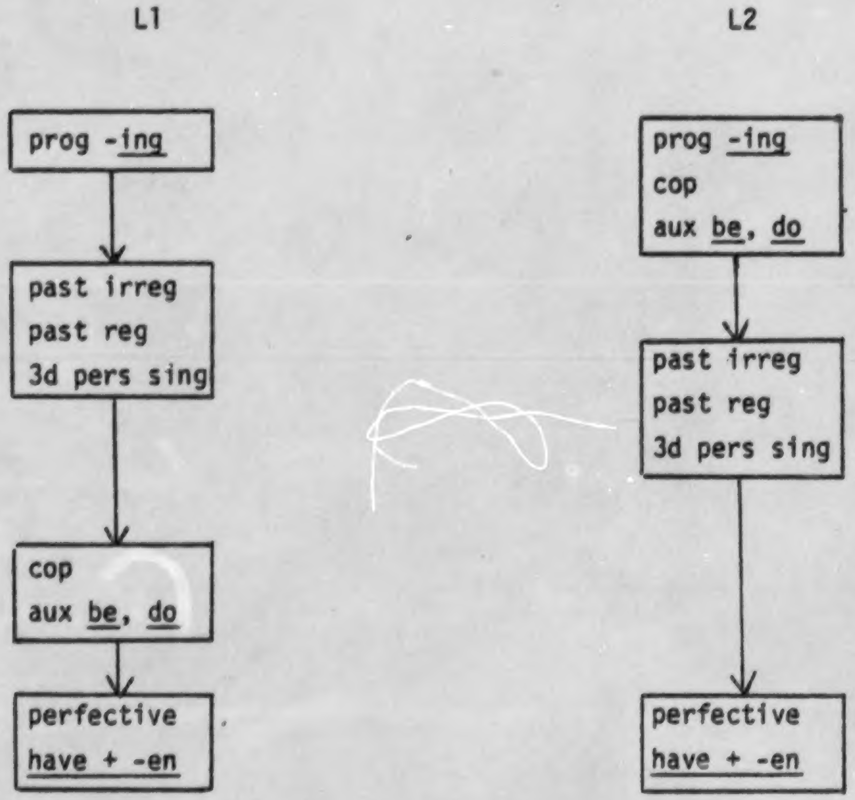
L1
L2
prog -ing
past irreg
past reg
3d pers sing
cop
aux be, do
perfective
have + -en
prog -ing
cop
aux be, do
past irreg
past reg
3d pers sing
perfective
have + -en

Figure 1, along with the data presented in Table 1, provides a basis for early childhood educators to predict what kinds of interrogative constructions children are likely to generate when the situation calls for a question. For example, older children acquiring English as a second language should progress through Stage 2 of interrogative development more rapidly than younger L1 children, since they can be expected to gain control over the auxiliaries sooner. Neither L1 nor L2 children, however, should be expected to formulate questions using the perfective at the same time they are beginning to use questions involving past tense constructions. Knowing such details of the process of interrogative development gives educators the ability to pinpoint difficulties of both first and second language children and to adjust language programs to address those difficulties.

PART II

USING IMITATION AS A TEACHING STRATEGY

Chapter 3

DESIGNING AN IMITATIVE LANGUAGE PROJECT

The language project described in this chapter was developed within a framework of the previously discussed Piagetian and psycholinguistic theories on the function of imitation in the language acquisition process. Imitation is defined by these theories

> as a form of encoding that continues the processing of information that is necessary for the representation of linguistic schemas (both semantic and syntactic) in cognitive memory (Bloom, Hood and Lightbrown, 1974:418).

In this context, the model sentence provides perceptual support for effects recognized by the child but not yet fully part of his productive linguistic rule system, with the actual imitation providing experience in mapping contextual information onto the linguistic schemes already in cognitive memory. The project was designed to test two hypotheses inferred from this theory and definition of imitation: 1) imitation may be used by the educator as an assessment tool to determine the progress of development in specific linguistic areas in individual children; and 2) imitation may be employed by some children (but not all) as a strategy to process new syntactical surfaces and to map them onto previously acquired linguistic schemes.

The grammatical structures that are the focus of this project are four types of interrogatives: 1) WH-questions that have a contractible copula in the verb phrase; 2) WH-questions that have either the present or past form of the auxiliary do in the verb phrase; 3) Y/N questions that have the past form of the auxiliary do in the verb phrase; and (4) Y/N questions that have the perfect auxiliary have in combination with the past participle seen in the verb phrase.

Two groups of children participated in this project. The first group was comprised of 16 preschool children ranging in age from 3½ to 5 years, all from professional class backgrounds. This group included two children acquiring English as a second language,[1] one from a Japanese and one from a Persian language background. The second group of children was composed of 15 first grade children ranging in age from 5½ to 7 years, whose socioeconomic backgrounds varied from working class to professional class. Nine of these children spoke English as a second language, with 8 from Spanish-speaking homes and 1 from an Arabic background.

The language materials and activities were implemented on a once-a-week basis for 16 weeks for the preschool children and 14 weeks for the first graders. Tape recordings were made of 16 imitative sessions (9 preschool and 7 first grade), 3 sessions during which questions were elicited from the children through the use of a puppet (2 preschool and 1 first grade), and 6 sessions of spontaneous peer and teacher-child interactions (all preschool). The tapes were transcribed within a few hours of each taping session, and the typewritten transcriptions were analyzed using a descriptive methodology.

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[1] The abbreviation, L2, will be used hereafter to designate children acquiring English as a second language; the abbreviation, L1, will denote children from native English-speaking backgrounds.

The following steps were involved in the course of the project:

1. Development of criteria for language materials and activities;
2. Selection of the materials;
3. Design of the activities;
4. Selection of the subjects;
5. Implementation of the 16-week program of activities;
6. Recording and transcription of 21 sessions; and
7. Descriptive analysis of the data.

This chapter will describe the first four of these steps; the remaining three steps will be discussed in Chapter 4.

CRITERIA FOR SELECTION AND DESIGN OF MATERIALS AND ACTIVITIES

In addition to the psycholinguistic framework for this project, several criteria were used in selecting the materials and designing the activities. These criteria can be grouped into six categories.

1. The imitations produced by the children should be creative reconstructions of the model, reflecting either the child's

productive rule system or one he is just beginning to grasp. For creative imitations to be constructed, the child must be able to "attend to, separate out by way of abstraction and assimilate regularities embedded in the models that are imitated" (Ruder, Smith and Herman, 1974:17). Spontaneous imitations are usually creative by nature (Rodd and Braine, 1970); elicited imitations can be either creative (Slobin and Welsh, 1967) or echolalic (Fraser, Bellugi and Brown, 1963). The language activities described below were designed to elicit creative imitations by involving the child in a meaningful interaction in which his attention was on the interaction rather than on the syntax of the language used for the interaction.

2. The context for imitation should be interactional. Bever (1970:280) sees linguistic structures as being determined, at least in part, by "the learning and behavioral processes that are involved in acquiring and implementing the structure." Even beyond the obvious interactional function of the interrogative, there is a further interactional aspect to this structure. One or more transformations are required to move from the deep structure of the interrogative to its surface structure. Hass (1971:56) suggests that transformational processes can best be taught "in line with G.H. Mead's stress on reciprocity in role relations, since a major aspect of transformational functioning derives from taking the role of the other." The language activities described below focus on both the functional interaction of the questioner and the questioned and the reciprocity of those roles.

3. Children's natural impulses towards playful language exploration should be exploited. One of the primary curricular problems in the effort to assist the grammatical development of particular children is to find language activities that are engrossing enough so that children will approach them with enthusiasm (Hass, 1971). Since many children, on their own, explore various aspects of language that are new to them through phonological, syntactical and semantic play (Garvey, 1977; Elkind, 1976; Weir, 1972; Chukovsky, 1963), it makes sense to focus this natural attraction to language play onto specific aspects of grammatical development. The language materials presented below were selected in part because they either exhibit a playful use of language (*e.g.*, the nonsense rhymes) or contain language that stimulates the child's own impulse towards language play.

4. The imitations and language play should be integrated with gross motor actions that underline the cross-modal aspect of of language communication. In Piaget's model of cognitive development (including language development), early sensori-motor action patterns result in action structures that are the beginnings of later cognitive and linguistic structures (Sinclair, 1971). Operative structures, or schemes, are coordinated, according to Piaget, not only intramodally in the temporal integration of two or more schemes, but also cross-modally by means of reciprocal assimilation. One important type of cross-modal functioning is seen in the multichannel communication of young children who combine

situational clues, gestures and words in their communicative behavior (Moerk, 1975). The language activities described below were designed to emphasize this natural cross-modal language functioning by having children accompany the language materials with body movement that both interprets the semantic content of the materials and underlines the situational aspect of the communications.

5. The language activities should include some non-verbal activities that relate to interrogative structures. Psycholinguists generally agree that children verbally express only those structures they have previously mastered on a nonverbal level (see, for example, Bloom, 1970; Brown, 1973; Slobin, 1973). It is also highly probable that nonverbal structures causally effect later verbal schemes (Moerk, 1975). In addition to this psycholinguistic rationale for including nonverbal activities in a language program, there is also a motivational one. Children with language problems -- stemming either from delayed language development or from their having been catapulted into a strange linguistic environment -- often are reluctant to participate in activities that require a display of their deficiencies. Such children can, however, throw off their inhibitions in activities in which instructions and actions are accomplished nonverbally. Successful participation in such nonverbal activities may, for some, lead to a change in attitude towards participation in verbal activities, especially if some of the motor actions and gestures of the nonverbal activities are carried over into the verbal ones.

6. The materials should be capable of stimulating imitations in multiple contexts. Since different children employ

different strategies to develop language competence (see, for example, Nelson, 1973; Bloom et at, 1974; Brown, 1973), an eclectic approach to the use of materials and activities is useful. As Cazden (1972b:30) points out, structured programs at least "guarantee a more equal distribution of teacher attention" per child over nonstructured programs in which the number of teacher-child interactions often reflects the child's tendency to initiate those interactions. It is difficult for shy children who also have some language difficulties to use adults--or even other children--as resources for linguistic help and information. On the other hand, the most extended "practice" of linguistic structures through playful language exploration would more likely come from private or semi-private linguistic excursions in which a single child, or two or three children together, "playfully take apart and put together building blocks" of language (Garvey, 1977:66). In addition, for those children whose language is underdeveloped in a particular area, educators need materials that can also be used in one-to-one interactions with the child in order to assess continually the progress of that child in a given area of difficulty. The materials presented below are flexible enough to be used in 1) structured group interactions; 2) informal peer encounters or private soliloquies; and 3) one-to-one teacher-child interactions.

Hass (1971:57) points to the usefulness of "syntactic rifles--programs which are directed toward a certain process which seems to be particularly underdeveloped in the children with whom one is working." The materials and activities presented in this chapter were designed as just that: a syntactic rifle that will help some children explore the parameters of the surface syntax of the English interrogative and the transformations through which those surfaces are derived, while at the same time providing teachers with a tool with which to assess continually the language development of specific children who need help in this particular area.

SELECTION OF LANGUAGE MATERIALS

The language materials selected for this project consist of four American folk rhymes. Three of the rhymes are in the form of a rhythmic dialogue; that is, they contain a series of questions to which either fixed or spontaneous answers may be responded. The fourth rhyme is a leader-response chant.

WH-Questions with the Auxiliary Do and the Contractible Copula

The first dialogue features a series of WH-questions containing either a contracted copula or the auxiliary do in the verb phrase:

(1) What's your name? Mary Jane.
Where do you live? Down the drain.
What's your number? Cucumber.
What do you eat? Pig's feet. (Author's collection)

The rhyme, a traditional nonsense ritual found in many English-speaking countries (see Opie and Opie, 1975), can be extended by the children to include other WH-questions, such as

Who's your friend? Baby Ben.
How old are you? Twenty-two.
Where's your teeth? Down the street.
What do you drink? Black ink.
What do you wear? Golden hair and underwear. (Author's collection)

Y/N and WH-Questions with the Auxiliary Did

Two dialogues combine Y/N questions with WH-questions, all using the auxiliary did:

(2) Did you go to the barney? Yes, ma'am.
Did you see my mulie? Yes, ma'am.
Did you feed my mulie? Yes, ma'am.
Well, what did you feed him? (Seeger, 1948:113)

(3) Did you feed my cow? Yes, ma'am.
Did you feed my cow? Yes, ma'am.
Well, what did you feed her? Corn and hay.
What did you feed her? Corn and hay.

Did you milk my cow? Yes, ma'am.
Did you milk my cow? Yes, ma'am.
How did you milk her? Swish, swish, swish.
How did you milk her? Swish, swish, swish.

Did my cow get sick? Yes, ma'am.
Did my cow get ticks? Yes, ma'am.
How did she look? Spots all over.
How did she look? Spots all over.

Did my cow die? Yes, ma'am.
Did the buzzards fly? Yes, ma'am.
Well, how did they fly? Flap, flap, flap.
How did they fly? Flap, flap, flap. (Author's collection)

The format of these two dialogues, a past-tense Y/N question followed by a WH-question which demands more specific information, is commonly found in American folklore (see Jones and Hawes, 1973, for another variant). It is a form that is especially useful for creating new dialogues around other topics, involving places the children have visited, such as the zoo, the firehouse or the doctor's office.

Y/N Questions with the Perfective

The fourth rhyme selected for this project contains the construction have . . . seen. This rhyme is an antiphonal chant in which the leader says a phrase for the group to repeat:

(4) Evalina! (Evalina!)
Have you seen her? (Have you seen her?)
She has a wooden leg! (She has a wooden leg!)
She has a wooden head! (She has a wooden head!)
She has a wooden nose! (She has a wooden nose!)
Pizza, pizza, mighty moe! (adapted from Jones and Hawes, 1972:63)

The last line is chanted together by the entire group several times over. Each child who leads the rhyme, of course, selects different parts of the body -- or of the environment -- that he wants to be "wooden."

DESIGN OF THE LANGUAGE ACTIVITIES

Structured Group Activities

The activities described below, both verbal and nonverbal, were designed for use in a structured group situation in which the teacher both initiates language and actions and response to the initiations of the children. The verbal activities demonstrate the variety of ways the language materials can be used; the nonverbal ones extend some of the ideas of the verbal ones to activities without words. The activities fall into four basic types.

1. Interrogatives answered verbally with accompanying motor actions. Two kinds of motor actions can accompany the language materials. In the first kind, the rhythm of the surface syntax of the answers can be physicalized by the clapping out of the syllables. For example, in Language Material (1), the hands can be outstretched and motionless during the question, What's your name?; they can then "unfreeze" for the answer to clap out the

syllables of the answer, Márý Jáne. Younger children who cannot physicalize both strong and weak syllables may clap only the strong syllables, that is Máry Jáne. The motionlessness alternating with syllabic motor action can continue throughout the rhyme, with the motor action including knee-slapping, shoulder-tapping, foot-tapping, etc., as well as hand-clapping.

In the second kind of motor accompaniment, the meaning of the answer is interpreted gesturally. For example, in the Language Material (3), the question, How did you milk her?, again accompanied by "frozen" motion, is answered with cow-milking gestures (as invented by the children) to accompany the sounds, swish, swish, swish; or the question, How did they fly?, with invented bird-flying gestures to accompany flap, flap, flap. Both kinds of motor actions--syllablization and gestural interpretations--can be expanded to larger body motions such as walking, jumping or hopping, large arm gestures and/or upper body movement, either while moving across a large open space or in a kind of circle dance.

In both these kinds of motor-action accompaniments, the frozen motion dissolving into motor action underlines the functional aspect of the interrogative; that is, what is being questioned is unknown; only the answer that changes the unknown into the known can "unfreeze" the suspended motor action.

2. Interrogatives answered by motor action that is accompanied by verbal comments on the action. Supplementary

language materials were included in the project that featured interrogatives answered nonverbally with motor actions. The following song is a circle game in which the child in the center invents a motion in response to the question, What can you do? The second part of the song does not answer the question but rather makes a verbal comment on the invented motor action as it is imitated by the rest of the group:

(5) What can you do, Punchinella, Punchinella?
What can you do, Punchinella in the shoe?

We can do it, too, Punchinella, Punchinella.
We can do it, too, Punchinella in the shoe. (Author's collection)

3. Verbal questions and answers translated into verbal questions and nonverbal answers. This type of activity involves the translating of speech rhythms into abstract sounds tapped out on a drum or other percussion instrument. Two children at a time take turns, one asking the questions, the other answering verbally while simultaneously translating the syllables of the answer into drumbeats. The verbalization of the answers may be dropped eventually to let the surface syntax become a totally abstract rhythmic pattern.

4. Nonverbal motoric questions and answers. Several types of completely nonverbal activities are relevant to, if not the interrogative structures themselves, then at least the functional aspect of questions and answers. Move and freeze, an activity in which the children move whenever a drum or other instrument is played by the teacher and freeze into statues whenever the

instrument stops, is a kind of extension of the frozen motion dissolving into motor action described in Activity Type (1) above (see page 56). Question and Answer is another nonverbal activity in which one child "plays something" on a drum and a second child "answers him" on another. (Drums with more than one tone, such as African slit drums, are especially effective for this activity.) Question and Answer can also be played silently, with one child miming a silent body motion and another child answering him.

Each of the above activity types was designed to be used in conjunction with other types. That is, a typical group session would include several different types of activities and always at least one completely nonverbal one.

While the overall behavioral objective of the activities is to induce the children to creatively imitate the model interrogatives contained in the materials, a first-step objective is to involve all of the children on at least one level of the activities. For some children, this involvement may remain on the motor level alone for whatever period of time it takes for these children to become free enough to hazard their own linguistic imitiations. For such children, the motoric imitations and the completely nonverbal activities will be especially useful. While theories of sensory integration[2] point towards a child's participation in related motor activities affecting his language development, it remains unconfirmed whether such participation actually assists his developing interrogative structures or whether it only provides him with the motivations to begin to creatively imitate the linguistic structures. Indeed, until all the mechanisms of language acquisition are known, it remains a hypothesis that imitative language activity accompanied by related motor actions advances a child's developing interrogative structures. As Hass (1973:57) says:

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[2] It is beyond the scope of this thesis to even briefly survey the various theories on sensory integration. For an overview, see Gearhart, 1977:41-67.

> If one sees change in the use of a certain grammatical construction by a child, one has no way of knowing whether one has affected processes relating to surface structure, deep structure, and/or transformations . . . [but] in order to try to get change in language, one puts everything that looks promising into the training program.

Semi-Structured Teacher-Child Interactions

It is important that the language materials and activities be extended beyond the structured group context and used in less formal situations in which the teacher interacts with a single child or a small group of two or three children. The materials can be extended in a number of ways. The author, for example, employed a hand puppet and, through the puppet, directed a few children to ask the puppet the questions of the rhythmic dialogues and to extend these materials by creating new questions along the same topic. Other possibilities include: 1) the use of dolls; that is, having the children manipulate a pair of dolls and having one doll ask the questions of another (see, for example, C. Chomsky, 1969); 2) dramatization of the materials; that is, the teacher encourages two or three children to act out a selected rhythmic dialogue; 3) use of drawings; that is, one of the rhythmic dialogues might stimulate a child's drawing; a second child could be directed to ask the first child the questions of the particular dialogue. In these activities, the children would be creating "delayed imitations" away from the influence of the rhythmic chanting; they would be using those imitations to stimulate completely new interrogatives using similar grammatical constructions. Activities such as these are particularly useful to the teacher as a way to keep up with a particular child's process informally.

Spontaneous Peer Interactions and Private Soliloquies

While the language materials were designed to be introduced to the children during structured group sessions and extended in small-group and one-to-one interactions, they have been selected because they are attractive enough to children so that the children take the materials outside the classroom and turn them to their own selected usage -- to accompany another play activity (sandbox play, for example) or to "teach" another child or adult. While a teacher cannot observe these private uses of the materials directly, she may hear about them from the children's own reports on how they used them or from the children's parents. This kind of usage -- in which the most extended language play and exploration of linguistic structures is likely to occur -- is an integral part of the project design.

SELECTION OF SUBJECTS

The children selected to participate in this project represented two distinct groups. One consisted of preschool children who were enrolled in a one-day-a-week after-school program sponsored by a private university located in a high socio-economic neighborhood. All of the children enrolled in this program were children of university graduates and most of the parents were engaged in professional class occupations. In contrast to this group, the second group consisted of children enrolled full time in a public school first grade and bussed once a week to a special arts center that is part of the public school system. The elementary school is located in a high socio-economic neighborhood but the children enrolled in the school include both local children and children who live outside the neighborhood whose parents are employed in the area.

In the preschool group, 2 of the 16 children were in the process of acquiring English as a second language, including one Japanese-English girl and one Persian girl, aged 4 and 5 respectively. In the first grade group, 8 of the 15 children were Spanish-speaking, 1 spoke Arabic, 2 spoke Black English and the remainder spoke Standard English. Two of the second language children had begun their English language acquisition process within the previous year.

The groups of children were selected because they represented the broadest spectrum of linguistic backgrounds available to the author. Because the nature of the project was descriptive rather than experimental, no attempt was made to match the children with control groups representing similar language and socio-economic backgrounds or to do pre- and post-testing.

Chapter 4

OBSERVING CHILDREN'S IMITATIONS OF INTERROGATIVES

PROJECT IMPLEMENTATION

The program of language activities was implemented on a once-a-week basis over a 16-week period for the preschool children and a 14-week period for the first grade children. During this time, the preschool group lost one session due to snow conditions and attendance was low due to illnesses during the fifth through the tenth weeks. The first grade class lost 4 sessions due to snow conditions and a teachers' strike; attendance was normal otherwise.

All of the language materials were introduced to the children without verbal instructions. That is, the teacher/observer simply chanted the rhyme while accompanying herself with the motor actions described in Language Activity Type 1 (page 56). After two or three repetitions of the rhyme, children would volunteer to ask the questions for the rest of the group to respond to verbally or motorically. Children who did not volunteer were encouraged to take a turn, although the final decision as to whether or not to participate was left to each individual child.

Language Material (1), What's Your Name? Mary Jane (page 54), was introduced to both groups of children during the first week of the project. It was used both for imitative activities and for stimulating the generation of different WH-questions with the same structure during the next six weeks. During the fourth session for each group, a puppet was introduced to elicit WH-questions from the children. In these sessions, the puppet would typically say to a child, Ask me what my name is, in order to elicit the question, What's your name?

Language Material (2), Did You Go to the Barney? (page 55), was introduced to only the preschool group during their fourth session. It was used both for imitative activities and for generating new questions about different places the children had recently been, such as this sequence indicates:

> Did you go to the hospital?
> Did you see the doctors?
> Did you see the nurses?
> Did you go to the operating room?
> What did they do?

The rhyme was used during sessions 4 and 5 and then reintroduced after an 11-week hiatus during the final session.

Language Material (3), Did You Milk My Cow? (page 55), was introduced to only the first grade group during their third session. It was used for imitative activities during the fourth, fifth and sixth sessions and reintroduced after a ten-week hiatus during the final session. It was not used to stimulate the generation of new questions but rather to develop different kinds of accompanying motor actions.

Language Material (4), Evalina, Have You Seen Her? (page 56), was introduced to the preschool group during their seventh session and to the first grade group during their sixth session. From the children's point of view, the focus of the chant was the generating of declarative sentences naming the (wooden) parts of "Evalina's" body; thus, the rhyme was not used to stimulate other interrogatives using the perfective in the verb phrase. Because of its popularity, the rhyme was used during each of the remaining sessions with both groups.

RECORDING AND TRANSCRIPTION OF DATA

The children's imitations were tape recorded on a Sony TK55 cassette tape recorder with an external microphone. Nine imitative sessions were recorded from the preschool children and six from the first graders. Recordings were also made of the preschool children's spontaneous speech before and after the imitative sessions, speech that included both peer and teacher-child interactions. The sessions with the puppet were also recorded.

The tapes were transcribed within a few hours of each taping session and transcripts were typed for each tape. These typewritten transcripts, rechecked while listening to the tapes a second time, contain all the data used for analysis of the project.

DESCRIPTIVE ANALYSIS OF DATA

The data produced from the recordings of the children's imitations provided the basis for three categories of observations: 1) observations of developmental errors; 2) observations of second language progression of errors; and 3) observations of the effectiveness of the imitative activities on the developmental process.

Observations of Developmental Errors

Predictions. From the psycholinguistic research on imitation discussed in Chapter 1 and the developmental patterns of interrogative structures described in Chapter 2, predictions were made that 1) the imitations produced by the children would contain errors that would be relevant to each child's stage of interrogative development; and 2) since children aged 3 to 7 were involved, all three stages of interrogative development would be represented in the data. Table 3 (page 66) shows the predicted pattern of errors for the interrogatives contained in the language materials (cf. Table 1, page 39). As the table shows, the models, What's your name? and Where do you live?, should be recreated as What your name? and Where you live? by a child in the earliest stage of interrogative development. A child in the intermediary stage of development, for whom control over the copula or auxiliary has begun but the rule for transposing the subject and auxiliary has not yet emerged, should imitate these

TABLE 3. PREDICTED ERRORS FOR INTERROGATIVES CONTAINED IN LANGUAGE MATERIALS

Developmental stages	Predicted errors Y/N questions	Predicted errors WH-questions
I. Attachment of intonation marker or WH-pronoun to uninverted nucleus	Go barney? Feed cow? Milk cow? Cow get sick? Cow die? Buzzards fly? You see her?	What your name? Where you live? What your number? What you eat? What you feed? How you milk? How she look? How they fly?
II. Expansion of nucleus to include unmarked verbs, adj. & loc.; beginning aux/modal with occasional Y/N inversion	You go barney? You feed my cow? You milk my cow? My cow got sick? My cow (did) die? The buzzards (did) fly? You have see(n) her?	What your name is? Where you do live? What your number is? What you do eat? What you do feed her? How you did milk her? How she did look? How they did fly?
III. Development of aux/modal with beginning transformations; overgeneralization of tense markers	Did you went my barney? Did you feed(ed) my cow? Did you milk(ted) my cow? Did my cow got sick? Did my cow died? Did the buzzards flied? Have you see her?	What's your name is? Where you do lives? What's your number is? What do you eats? What do you feeds her? How did you milkted her? How did she lookted? How did they flied?

two models as What your name is? and Where you do live? Following Hakuta's (1976) observation on pre-fabricated patterns employed by second language learners (see page 40), the further prediction was made that unsegmented or partially segmented imitations might be collected from children with minimal English language skills or from both L1 and L2 children in imitation of grammatical constructions well in advance of their current rule system.

Confirmation of general hypothesis. The data confirm the general psycholinguistic hypothesis that imitations are actively filtered through a child's current rule system. This confirmation was made for both delayed imitations (that is, imitations produced without an immediately preceding model) and for immediate imitations (that is, those imitations produced when a child was coached by either the teacher/observer or another child for each separate line of the rhyme.) Delayed imitations not only revealed the grammatical structure of the interrogative redefined by the child's current understanding of the rules governing its construction, but also included extraneous nongrammatical information that indicated the child's interpretation of the model. For example, the question,

What's your number?

was reproduced by many children as

What's your telephone number?

and by one child as

What's your number's house?

In constructing immediate imitations, the children often determinedly stuck to their own grammatical structures. Children in the first-grade class coached each other; with many second language children in the group, the coacher's rule system was often at the same level or even less advanced than that of the child's who was being coached, as the following exchange indicates:

Luisa (coaching):	Did the cow got sick?
Josefina:	Did the cow get sick?
Luisa:	Did my cow got died?
Josefina:	Did my cow die?

Developmental Errors. The prediction that the data would contain developmental errors representing the three stages of interrogative development was not confirmed. Table 4 (page 69) shows the errors produced by L1 and L2 children in imitation of the interrogatives contained in the language materials. A comparison of the errors contained in Table 4 and the errors predicted in Table 3 (page 66) shows that 1) not all stages of developmental errors are represented in the data; and 2) two types of errors appear that are not reported anywhere in the literature, both types representing a kind of intermediary stage between omission of the auxiliary or copula and target usage.

For WH-questions, the intermediary stages reported in the literature are first, the use of the auxiliary or copula in its uninverted position; and later, overgeneralization in the use of the auxiliary or copula. Neither of these categories is represented in the data. Instead, the use of an invented, nonsensical auxiliary or copula in its proper transposed position is found:

Where uh you live?

TABLE 4. RECORDED ERRORS FOR INTERROGATIVES CONTAINED IN LANGUAGE MATERIALS

Error types	Y/N questions	WH-questions
I. Partially segmented constructions	Hav a seen a? Hev ou seen a? Ha you seen a? Hev you seen er? Ha you seen her?	
II. Omission of aux/cop	Feed a cow? Ya milk cow? You went my barney?	Where (wha) you live? What (wha) you eat? What your name? What your (you) number? What you feed? How you milk her?
III. Substitution of invented aux/cop; substitution of present aux for past aux; substitution of past aux for perfect aux	Wo you see her? Wod you see her? Do you milk my cow? Do you feed my cow? Did you see her?	Where uh you live? What uh you eat? What uh your name? Wha uh she look?
IV. Overgeneralization	Did you saw . . . did you see my horsie? Did my cow got sick? Did my cow got died? Did my cow get died? Did you went my barney?	

For Y/N questions, the intermediary stages reported in the literature consist of the use of the auxiliary in an uninverted position followed by overgeneralization in the use of the inverted auxiliary. Although overgeneralizations do appear in the data, the uninverted auxiliary again does not appear. Instead, the intermediary stage represented in the data consists of either 1) the substitution of an auxiliary-verb combination from an earlier rank in the functor acquisition order (see Figure 1, page 44), such as Do you milk my cow? substituted for Did you milk my cow? or Did you see her? substituted for Have you seen her?; or 2) the use of an invented nonsense auxiliary substituted for the perfect auxiliary, such as Wo you see her? substituted for Have you seen her?

Comparison of L1 and L2 Errors. Table 5 (page 71) compares the errors of L1 and L2 children. As the table indicates, both L1 and L2 children made the same kinds of basic errors when they imitate WH-questions. That is, both groups produced functorless interrogatives, such as What your name?; and both produced invented auxiliaries and copulas, such as Where uh you live? Only three L2 children produced errors not observed in any L1 imitations of WH-questions: a substitution of ask for what (Ask your name?); a substitution of What's for Where do (What's your eat?); and the omission of the noun subject (What did feed?)

In the imitations of the Y/N questions, however, the table shows that only L2 children made developmental errors. No

TABLE 5. COMPARISON OF L1 AND L2 DEVELOPMENTAL ERRORS

Error types	Y/N questions		WH-questions	
	L1	L2	L1	L2
I. Partially segmented constructions	Hav a seen a? Hev you seen a? Ha you seen her?	Ha you seen a? Hev ou seen a?		
II. Omission of aux/cop		Feed a cow? Ya milk cow? You went my barney?	Where you live? What you eat? What your name?	Where you live? What you eat? What your name? What your number? What you feed? How you milk her?
III. Substitution of invented aux/cop; substitution of aux from earlier functor rank		Do you milk my cow? Did you see her? Wo you see her? Wod you see her?	Where uh you live? What uh you eat? What uh your name?	Where uh you live? What uh you eat? Wha uh she look?
IV. Overgeneralization of tense	Did you saw . . . did you see my horsie?	Did my cow got sick? Did my cow got died? Did my cow get died? Did you went my barney?		
V. Other				What's your eat? Ask your name? What did feed?

L1 child used intonation alone to mark the interrogative; no L1 child employed an invented auxiliary or substituted a construction using a functor from an earlier rank order. Only one L1 child overgeneralized the verb in

Did you saw . . .

and he corrected himself immediately to

. . . did you see my horsie?

When the perfective construction was first introduced, both L1 and L2 children appeared to be puzzled by it and children from both groups used avoidance tactics in order to be able to say the remainder of the highly attractive rhyme without having to produce the unknown construction. One L1 child produced an unsegmented construction (probably produced by rhyming it with the preceding line, Evalina):

Hav a seen a?

and both L1 and L2 children produced partially segmented constructions, such as

Hev you seen a? (L1)

and

Ha you seen a? (L2)

However, by the end of the observation period, all of the L1 children were producing Have you seen her? without having ever made the developmental errors produced by the L2 children. On the other hand, two of the L2 children invented the auxiliaries wo and wod to substitute for have; one substituted the past tense construction; and one child used only segmented or partially segmented constructions throughout the period of observation.

Observations of Second Language Progression of Errors

Prediction. Based on the pattern of developmental errors reported in the preceeding section, the prediction might be made that L2 children, when confronted with an unfamiliar grammatical construction, would proceed through the following developmental progression of errors to reach the target grammar:

1. unsegmented or partially unsegmented construction
2. omission of auxiliary or copula
3. use of incorrect or invented auxiliary or copula
4. correct auxiliary with overgeneralization (in Y/N questions only)

Within the overall pattern, some variance by individual children could be expected to occur. First, some children might skip one or more stages. Second, since developmental stages overlap for both L1 and L2 children, the data should not be expected to yield an orderly progression from omission to target; in fact, some "regression" could be expected to occur with some children from session to session. Third, since the entire period of observation was only 16 weeks for the preschool group and 14 weeks for the first graders, some children might well appear to make "no progress" at all on certain constructions.

Error Progression for Four L2 children. The imitations of four of the L2 children -- selected on the basis of their having formed the more complete L2 data recorded -- were examined in detail and were found to fall within the parameters of the predicted developmental error progression. The four children's ages, native languages, length of time in the United States and prior English language experience (as of the beginning of the observation period) are shown in Figure 2.

FIGURE 2

BACKGROUND INFORMATION OF FOUR L2 CHILDREN

Name	Age	Language Background	Length of Time in U.S.	English Language Experience
Jun	4	Japanese	Born in U.S.	English father; began speaking English in 1977; spends 2 hrs/day in preschool
Maryam	4½	Persian	4 years	No English in home; spends 2 hrs/day in preschool
Yusif	6	Arabic	1 year	No English at home; attends first grade all day
Josefina	6	Spanish (Mexican)	5 months	No English at home; attends first grade all day with many Spanish-speaking classmates

The imitations of the four children are arranged in Table 6 (page 75) in order of taping. The first column contains imitations taped during the session in which the model construction was introduced; the third column contains imitations recorded during the

TABLE 6

PROGRESSION OF DEVELOPMENTAL ERRORS IN L2 CHILDREN

CHILD	INITIAL IMITATIONS	MEDIAL IMITATIONS	FINAL IMITIATIONS
1. WH + Copula (16 weeks preschool and 14 weeks first grade between initial and final imitiations)			
Maryam	(C) What your name?	What is your name?	What's your name?
	--	What is your number?	What's your number?
Jun	Wha's your name?	--	--
	Wha's your number?	--	What's your number?
Yusif	(C) What's your name?	Wha's your name?	Wha's your name?*
	(C) What's your number?	What's your number?	What's your phone number?
Josefina	--	What's your name?	What you name?
	(C) What's your number?	What's your number?	What you number?

(C) indicates child was coached by teacher/observer or another child.

*Since Yusif is in a first grade class where black English is spoken, this construction could be considered target.

TABLE 6 (CONTINUED)

CHILD	INITIAL IMITATIONS	MEDIAL IMITIATIONS	FINAL IMITATIONS
2. WH + Auxiliary			
Maryam	Where you live?	What you . . . where d'you live?	Where do you live?
	What d'you eat?	What d'you eat?	What do you eat?
Jun	Where do you live?	--	Where do you live?
	Wha's . . . what do you eat?	Wha you eat?	What do you eat?
	What you feed?	--	What did feed?
Yusif	Where da you live?	Where d'you live?	Where d'you live?
	Wha da you eat?	Wha you eat?	What d'you eat?
Josefina	Where . . . wha . . . wha you live?	What you live?	What, what you live?
	Wha you eat?	Wha's your eat?	What do you eat?

TABLE 6 (CONTINUED)

CHILD	INITIAL IMITATIONS	MEDIAL IMITATIONS	FINAL IMITATIONS
3. Y/N WITH AUXILIARY DID (11 weeks between initial and final imitations)			
Maryam	(Avoidance)	--	(Avoidance)
Jun	Did you went my barney?	--	Did you went my barney?
Yusif	Did you milk my cow?	--	D'you milk my cow?
Josefina	Ya milk my cow?	Did you feed my cow? Did the cow get sick?** Did my cow die?** Did the buzzards fly?**	Did you milk my cow?
4. Y/N WITH AUXILIARY HAVE + EN (5 weeks between initial and final imitations)			
Maryam	(C) Have you seen her (unsegmented)	--	Wod you see her?
Jun	(Avoidance)	Wo you see her?	Did you see her?
Yusif	Did you see her?	--	Have you seen her?
Josefina	(C) Ave you see her?	Ha you seen a?	Hev ou seen a?

** Josefina was coached on these lines by another L2 child who did not present the target sentences; see observations on page 68.

final week of the observation period; the middle column contains all imitations taped between the first imitation and the final session. As the table indicates, the imitations of all four of the children for the three separate sets of interrogatives cover the range of predicted progress.

First, for the dialogue, What's your name? Mary Jane, Maryam's imitations of the questions demonstrate a clear progression from omission to control of the auxiliary and the copula, with very carefully enunciated copulas in her intermediary stage. Jun and Yusif seemed to have had some grasp of the use of both the copula and the auxiliary do by the first session and both move on to firm control by the last. Josefina, the child with the least English language experience, appears to regress in her use of the copula and makes little progress in her use of do.

Secondly, the data for the construction Did you + VP, are really insufficient to determine progress or nonprogress. Jun's persistence in the overgeneralization, Did you went my barney?, over a period of 11 weeks was probably due to the way the imitations were elicited in the dialogue, Did You Go To The Barney? That is, the teacher/observer would lead the first round of the dialogue and then ask, What else is in the barney? When a child called out an animal, the teacher/observer would direct the child to

> Ask us about the cow. Ask us if we went to the barney to feed the cow.

This approach required the child to make the appropriate transformations immediately after hearing the construction, *you went my barney*. All of the L1 children managed this without error. Jun did not and Maryam, the other L2 child in the preschool group, simply refused to ask the question, although she enthusiastically supplied animals.

Thirdly, the imitations of the four children for the rhyme, *Evalina, Have You Seen Her?*, cover the range of error progressions for L2 children. Maryam moved from an unsegmented rote copy of the teacher-observer's immediately preceding model to the use of the invented auxiliary *wod*. Jun used avoidance tactics initially, then progressed to the use of both an invented auxiliary and the past tense construction, *did . . . see*. Yusif began at the point of substituting the past tense construction and progressed to control of the perfective. And Josefina, for whom the construction was apparantly much too far in advance of her rule system, never was able to segment the construction completely.

Influence of Imitative Process on Interrogative Development

Hypothesis. The most recent psycholinguistic research (Bloom *et al*, 1974; Nelson, 1973; Miyamoto, 1973) discussed in Chapter 1 indicates that some children use imitation as a strategy in the early stages of language development to assist in the mapping of newly perceived structures onto existing linguistic schemes. From these findings, the author hypothesized that some older second language children might also use the imitative process as a strategy in the acquisition of interrogative structures.

Observations. It is clear that the data presented in Table 6 are insufficient to determine which, if any, of the children might have been assisted through their imitations of the materials in the acquisition of interrogative structures. While three of the four L2 children appear to make progress in their use of the copula and the auxiliaries did and have, as well as in their ability to make the required transformations from base structure to surface syntax, one cannot determine from these data whether their progress was influenced directly by the imitative process or whether the progress was occurring independently during the observation period. Spontaneous speech samples were collected from the preschool group, but the interrogatives contained within those samples were too few in number to determine whether the constructions under observation moved from the imitative category to the spontaneous (as in Bloom et al, 1974).

Interrogatives were also elicited from both the preschool group and the first grade class during the non-structured sessions with the puppet. However, the children who dominated these sessions tended to be L1 children whose language skills were already well advanced. When the puppet attempted to elicit a question from a particular L2 child, another child would jump in with the question before the L2 child had a chance to formulate the construction.

(This experience again points to the need for some structured sessions in which a teacher can be sure that every child has the opportunity to speak.)

Whether or not the imitative process assisted any of the children in the acquisition of interrogative structures, another type of assistance was observed. The language materials and activities clearly provided the motivation for some children to utter interrogative structures they would not have otherwise uttered. All of the children responded to the rhythmic dialogues with enthusiasm and most vied for a turn at asking the questions. Three of the four closely observed L2 children, however, showed some initial reluctance to taking their turn. Yusif and Maryam appeared to enjoy listening to others imitate the models and chanted the answers enthusiastically. They both drew back when their own turn to ask the questions arrived. Yusif often responded to the arrival of his turn with a firm _No way, I can't do it!_ or _I don't know what to say_. Maryam would raise her hand to take a turn and then, when the moment of actually saying the question came, would whisper, _Can't do it_ or _I don't want to do it_. Josefina, who did not appear to be afraid to try to say the questions, seemed to be prevented by a shy nature from ever volunteering any kind of speech. All three of the children showed signs of wanting to participate more fully in their new language environment but were apparantly unable to do so without a strong incentive. The language materials, along with some coaxing by the teacher-observer and encouragement from the other children, seemed to provide this incentive. Once these children had successfully participated in the language materials and activities, their general attitude toward overall participation changed from reluctance (based on shyness or fear of making an error) to enthusiasm.

The language materials not only drew reluctant children into full group participation. They also were attractive enough to be taken away from the group sessions and incorporated into the children's own worlds. One mother reported:

> He never stops singing and talking. What was that one you were saying this morning--that Gordie (an older brother) didn't believe--about a cucumber? Is that one you sing here? That cracked Gordon up. He sang that for us in the car this morning and Gordie said, "You made that up." And he said, "No, I didn't. It came from music class."

DISCUSSION

The observations of the preceding section, while providing some confirmation for the hypotheses this project was designed to test concerning the role of imitation in an early childhood language program, leave two questions unanswered.

First and Second Language Differences

First, why did the L1 children made errors similar to the errors of L2 children when they imitated WH-questions but not when they imitated Y/N questions? It is possible that the past tense construction, Did you + VP, was already under control for the L1 children when the rhythmic dialogues containing it were introduced. The perfective, however, was clearly a new construction for all but one of the L1 preschool children, most of whom looked bewildered when they first attempted to imitate it. Yet none of the L1 children produced any developmental errors for this construction and all reached the target grammar by the second or third time they imitated it. It seems that, once the segmentation process was accomplished, the perfective could be imitated without error by the L1 children, although it probably had not yet entered their spontaneous speech.

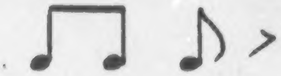
The major difference in construction between a WH-question and a Y/N question is the position of the auxiliary (or copula). In Y/N questions, the auxiliary occupies the initial position in the sentence, a position more perceptually salient than the medial position it occupies in WH-questions (see, for example, Ervin-Tripp, 1971; Newport, Gleitman and Gleitman, 1978). It might be, then, that these L1 children were able to perceive more quickly the initial auxiliary than the medial one. Once the new auxiliary _have_ was perceived, they were able to map the perception onto their current rule system for Y/N constructions. In other words, being very secure in their ability to construct Y/N questions using the copula and the auxiliary _do_ and _did_, they could fit the newly perceived _have_ into the model AUX-N-VB-NP? Whether younger children who, like the L2 preschool children under observation, were still experimenting with Y/N constructions using the copula and the auxiliary _do/did_, would make the same kinds of developmental errors in Y/N imitations that they L2 children did, would require further observation to discover.

Intermediary Stage Differences

The second question raised by the data concerns the discrepancy between the intermediary stages reported in the literature and the intermediary stage found in these imitations. Why is the stage of the uninverted auxiliary replaced in these imitations by a stage in which an invented or incorrect auxiliary is substituted in the correct inverted position? The answer to this question may be found in the rhythmic nature of the materials.

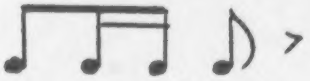
Researchers have recently begun to examine the role of rhythm in speech perception. One study, for example, found that children with language disorders were less able to process, store and integrate auditory input, including nonverbal sequences of rhythmic patterns, than children with normal language development (Tallal, 1978). Another study (Martin, 1970:627) has hypothesized that successive sounds of speech have a "hierarchical structure that is rhythmic." While the relationship between the rhythmic structure of the surface to the transformations that sentences go through from base to surface is not clear, the perceptual reality of stress is.

The rhythmic surface of the interrogatives in the materials is very clear and very strong. It should not be surprising, then, that children readily perceive that rhythmic structure superimposed over the grammatical structure. It might even be tentatively suggested that this rhythmic structure may in some way guide a child's search for the appropriate "fill-in" between, for example, Where you live? and Where do you live? That is, the child who omits the auxiliary, whose own original rhythmic structure is



Where you live?

might begin to perceive the target rhythmic structure for Where do you live? as



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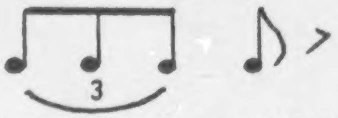

before he has discovered the auxiliary do. The newly perceived rhythmic pattern might tell him that an extra syllable is required. He might then attempt to fill in the extra perceived note with a syllable -- any syllable -- in order to reproduce that pattern for himself. Later, when he discovers the auxiliary do, he would be able to replace his own invented "auxiliary" with the newly acquired one.

Although in spontaneous speech, or in nonrhythmic imitations (see Bellugi, 1971), the child often leaves the auxiliary in its uninverted position as he experiments with his newly emerging rule system, it may be that he cannot do this when confronted with a strong rhythmic model. The do is the least stressed word in the sentence; in its uninverted position, the word does not fit easily into either of the rhythmic patterns represented above.

It might be even more tentatively suggested that the child, through this kind of rhythmic imitation, may be able to discover that one key to the position of the newly acquired auxiliary lies in the rhythmic structure of the interrogative syntax. That generalization might then become part of the overall process in discovering what is relevant in transforming base structures into surface ones.

SUMMARY

This thesis has examined the role of imitation in language development. At issue was the use the imitation as a teaching strategy in an early childhood language project directed at children acquiring English both as a native language and as a second language. The grammatical structure under observation was the interrogative.

The course of psycholinguistic imitation research was traced from the early 1960s through the most recent wave of studies, with the focus on how psycholinguists have regarded the function of imitation in the child's acquisition of syntax. Research was discussed that supported the early Chomskian view that imitation, although not important as a language acquisition device, could be a valuable tool for investigating a child's underlying grammatical system. Other, more recent research was also discussed, research that placed the imitative process within a Piagetian framework, defining it as an accommodative process through which a child can modify his existing linguistic schemes with respect to new information about form and content in his linguistic environment.

The stages of interrogative development in young children were reviewed. First and second language research on interrogative development and the acquisition of grammatical morphemes was discussed, research confirming that second language learners go through essentially the same processes and sequential stages as first language learners in developing an English grammatical rule system.

The findings and conclusions of the reported imitation research provided the basis for the hypothesis that imitation can be an effective teaching strategy provided that active accommodative linguistic behavior is elicited rather than echolalic behavior. Two educational uses were suggested for imitative language activities: 1) since children filter their imitations through their existing linguistic system, educators can use children's imitations of specific grammatical structures to assess the progress of their developing rule systems; and 2) since imitation is one strategy a child may choose to process details of the language he hears and to map perceptions onto his emerging rule system, educators can exploit the natural tendency to imitate by employing language materials and activities that call for imitative responses from children, assuming that some children may choose to utilize those activities as a language acquisition tool.

The language project designed to test the basic hypothesis narrowed the scope to imitations of interrogative structures. In addition to having a psycholinguistic and Piagetian framework, the project stressed interactive, playful, cross-modal and rhythmic aspects of language. The materials selected for imitation included four American folk rhymes, each one featuring one or two forms of interrogative structures. The activities designed emphasized both verbal and nonverbal behavior accompanied by rhythmic motor behavior. Preschool and first grade children were selected to participate in the project, including children acquiring English as a second language. The project was implemented over a 16-week period and imitative data were recorded and analyzed.

The imitations produced by the children included four types of developmental errors: 1) unsegmented or partially segmented constructions; 2) omissions of the auxiliary or the copula; 3) use of an incorrect or invented auxiliary or copula; and 4) overgeneralization of the tense endings. These errors differed somewhat from the types of errors reported in the literature and it was suggested that the differences might be the result of the rhythmic nature of the language materials.

Four second language children's imitations, selected for more detailed analysis, were found to move more or less progressively through the stages of developmental errors. Although the data were insufficient to determine whether or not the imitative activities had assisted these four children in their progress, it was noted that three of the four children were motivated by the imitative activities to participate more fully.

CONCLUSIONS

The central question this thesis has addressed concerns the use of imitation as a teaching strategy in an early childhood language project. It was suggested that imitative language activities could be useful in two ways: 1) they would provide some children with the opportunity to make use of a strategy with which to process details of grammatical structures; and 2) they would provide teachers with a tool with which to assess continually the progress a particular child makes in a specific area of language development.

The data collected during the language project indicate that imitative activities are valid in an early childhood language program, provided that the educator using them is careful to distinguish between the passive behavior of rote repetition and the active accommodative behavior of imitation in the Piagetian sense. Imitative language activities of the kind used in the language project may be especially useful as an informal assessment tool to mark the progress of children who do not talk very much. However, the data also indicate that such imitative activities are less useful as an assessment tool for first language than for second language children, especially in the area of yes-no questions.

As a language acquisition strategy for children, the effectiveness of imitation in an early childhood language program remains doubtful. The research on imitation discussed in Chapter 1 was limited to observations of children in the earliest stages of language development. The hypothesis that older second language children might use the same strategy cannot be inferred directly and the data from this project are inconclusive.

However, even assuming that imitation has a limited function in the development of specific linguistic competencies in children, educational procedures that utilize imitation may have an important role to play in the development of general communication processes. The value of imitation in an early childhood language program, especially in a program where children learning English as a second language are in attendance, may be its use as a first step in producing communicative, if not yet linguistic, behavior. In fact, attempts to establish English language skills in a child who has been catapulted into an English language environment are not likely to be successful. Verbal imitations accompanied by meaningful gestures, such as those used in the language project, have the advantage of being a natural kind of communicative behavior that is easy to establish, even on the first day, with a non-English-speaking child. Thus, imitations that emphasize social interactions may be viewed as an effective first step in establishing communicative behavior in a child new to the linguistic environment. Further, imitative language activities may be useful in providing an ongoing strategy that some children -- especially those whose language skills are underdeveloped -- may choose to utilize in order to participate successfully in language-based activities. The easily obtained success in imitation may then provide the motivation for such children to attempt nonimitative linguistic behavior; the imitation itself may provide a ready structure for that nonimitative linguistic behavior.

FUTURE RESEARCH

It was not within the scope of this project to address questions regarding the role of rhythm in language development. However, it is clear from the observations and discussion of Chapter 4 that rhythmic language imitations are different from both spontaneous and elicited nonrhythmic imitations in child language. Furthermore, within this project, imitation as a strategy cannot be isolated from an as yet unexplored acquisition strategy involving rhythmic perceptions. The findings of this project point to the need for additional research into the correlations between rhythmic perceptions and linguistic perceptions and how, and under what circumstances, those perceptions might combine to form a language acquisition strategy. Only then can the question be addressed properly as to whether or not rhythmic imitations, such as those elicited during the course of this project, provide any assistance to children in the acquisition of interrogative structures.

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